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VOLUME XXVII

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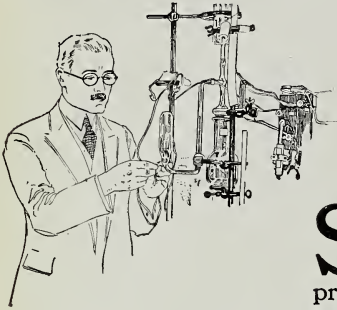
The Agricultural Student



MAY, 1921

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What Is Research?

SUPPOSE that a stove burns too much coal for the amount of heat that it radiates. The manufacturer hires a man familiar with the principles of combustion and heat radiation to make experiments which will indicate desirable changes in design. The stove selected as the most efficient is the result of research.

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Suppose, as you melted up your chemicals to produce rubies and experimented with high temperatures, you began to wonder how hot the earth must have been millions of years ago when rubies were first crystallized, and what were the forces at play that made this planet what it is. You begin an investigation that leads you far from rubies and causes you to formulate theories to explain how the earth, and, for that matter, how the whole solar system was created. That would be research of a still different type—pioneering into the unknown to satisfy an insatiable curiosity.

Research of all three types is conducted in the Laboratories of the General Electric Company. But it is the third type of research—pioneering into the unknown—that means most, in the long run, even though it is undertaken with no practical benefit in view.

At the present time, for example, the Research Laboratories of the General Electric Company are exploring matter with X-rays in order to discover not only how the atoms in different substances are arranged but how the atoms themselves are built up. The more you know about a substance, the more you can do with it. Some day this X-ray work will enable scientists to answer more definitely than they can now the question: Why is iron magnetic? And then the electrical industry will take a great step forward, and more real progress will be made in five years than can be made in a century of experimenting with existing electrical apparatus.

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General Electric
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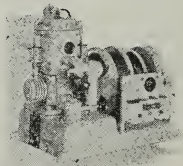
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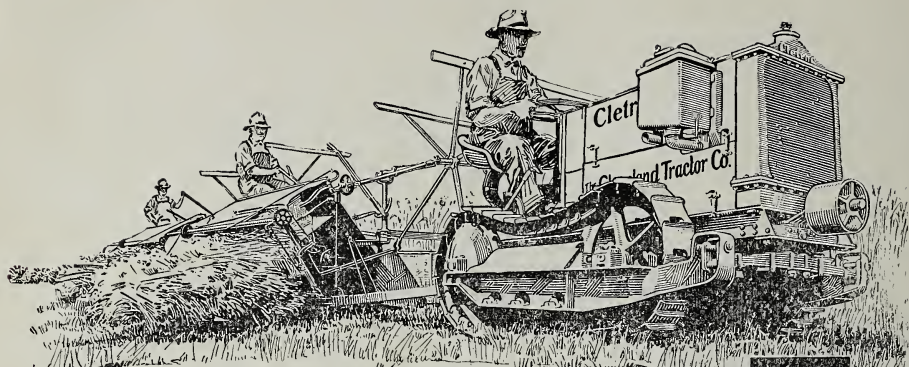
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Belt Pulley: Diameter 8 ins., face 6 ins.

Cletrac
TANK-TYPE
TRACTOR

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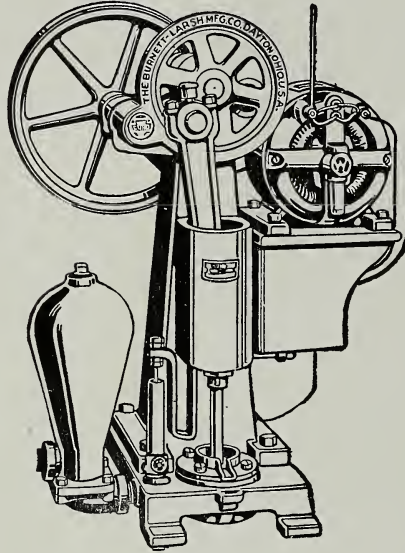
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The Agricultural Student

VOL. XXVII

OHIO STATE UNIVERSITY, COLUMBUS, OHIO, MAY, 1921

No. 9

THE CORN-SOYBEAN COMBINATION

By PROF. C. J. WILLARD

IN the last three or four years many articles have appeared in the farm press describing the benefits of growing corn and soybeans together, especially for silage. "A full crop of corn and a lot of soybeans besides," "more valuable feed and more of it," such are some of the claims made. Is this possible? Will it work out that way, or will the soybeans simply act like a growth of weeds and reduce the corn crop? The writer will admit at once that he has no definite answers to these questions. The department of farm crops has been trying to answer them for the past two years, and the results, while inconclusive, are so interesting that it seems worth while to give a brief account of them, and of the combination in other localities.

The corn-soybean combination is not entirely new. In its native home in the Far East, the soybean is largely grown as an intercrop with cereals and vegetables. In this country other legumes, such as garden beans, cowpeas and velvet beans are extensively grown in the same field with corn, and have been for many years. So while this exact combination is comparatively new, the idea is found in many common farming practices.

Only a few experiment stations so far have tried the corn-soybean combination and these for short periods with varying results. One of the longest experiments is from the Ohio station which as an average of six years showed no gain where soybeans were mixed with clover and an actual loss

where they were mixed with silage corn. The Rhode Island station secured larger total yields from the same area by growing the two crops separately and Cornell in two year's work reported a lower yield from the combination.

On the other hand, West Virginia, Indiana and Minnesota report favorable tests, averaging about two tons more silage from the mixture. Practical farm trials also, are largely favorable. Scarcely any of the dozens of farmers' experiences reported in the farm press of the last few years are in the least unfavorable, most of them indeed being very enthusiastic. However, the writer has talked to practical farmers of wide experience with soybeans who do not like the combination, so even this evidence is not unanimous.

The first test by the department of farm crops was made last year. It was an unfavorable season and only medium land, so the corn alone averaged only $5\frac{3}{4}$ tons of silage per acre. The combination made $8\frac{1}{2}$ tons per acre—a gain of nearly three tons per acre. The combination was greener than the corn alone, so that the gain in dry matter was only 1100 pounds. The crop was analyzed and the corn alone made 560 pounds of protein per acre, and the mixture 730 pounds,—a gain which will appeal to all cattlemen, especially dairymen.

This year two tests were made—a large scale test in the farm silage corn in the river bottom and a more careful small scale tests on upland

across the river. In the large scale test, the corn alone planted very thick on river bottom alfalfa sod, made 19 tons of silage per acre, while where the soybeans were drilled in the row, the corn made only $16\frac{1}{2}$ tons, a loss of $2\frac{1}{2}$ tons. To balance this there were only $1\frac{1}{2}$ tons of green beans per acre, and only a half ton of these reached the silo. On this field, then, the mixture caused a decided loss in total yield, and as the silage contained less than 3 per cent of soybeans, they could hardly have had an important effect on the composition.

The other test gave far different results. The corn alone made $10\frac{3}{4}$ tons of silage, while the plots in which three different varieties of soybeans were sown with the corn averaged $11\frac{1}{2}$ tons of corn, and $2\frac{1}{4}$ tons of green soybeans besides, a total of $13\frac{3}{4}$ tons of silage, or three tons more than was secured from corn alone. Beans alone made seven tons to the acre. There were 30 plots in all this series of tests so the average should mean something.

The results are borne out, also, by the tests in which the yield of mature grain was obtained. The corn alone made 82.4 bushels of shelled corn per acre (15 per cent moisture). The corn in which soybeans were planted made 82.2 bushels per acre and in addition over six bushels of threshed soybeans. As the soybeans alone made only 13.2 bushels on this soil, in this particular case we secured a full crop of corn and half crop of beans on the same land. This is, of course, unusual—a more common result is a reduction of four to six bushels in the yield of corn, with six to eight bushels of soybeans to replace the corn, a profitable mixture, but not so extraordinarily so as this one test.

What are the reasons for these irregular and conflicting results? Here, as

in the tests all over the United States, the mixture is immensely valuable under some conditions, yet causes a loss under others. Why? We do not, by any means, know all the factors concerned, but a few of them may be indicated.

1. The variety of soybeans used. It is useless to use a short early variety for silage. For mixing with corn one should have a medium to late bean, one with the leaves green when the corn is harvested, but the pods as mature as is consistent with that. It should be tall and either stiff or decidedly twining so as to be easily harvested. For the northern part of the state, Medium Green or Hollybrook will fulfill these requirements moderately well. For central and southern Ohio, Hollybrook, Wilson and Virginia seem to be satisfactory. This department tested a large number of varieties for this purpose last year and expects to have more data soon.

2. The kind of corn. In the face of these results and the Wooster results, there would seem to be little place for soybeans in large silage corn.

3. The fertility of the soil. On our "poor" soils, nitrogen is usually the limiting element, and under these conditions, especially if phosphate is applied, the mixture is almost certain to be more profitable than corn alone. Then we have at least a suggestion that on very rich soils corn alone is better.

4. Rate of seeding, both of corn and soybeans. If the mixture is to be profitable, the corn should not be thicker than normal for grain, while the soybeans should be sown at 5-10 pounds per acre, depending on the size of the seed. About 8 pounds is the average.

5. Inoculation of the soybeans. This must be attended to, and many

(Continued on page 440)

THE DRAINAGE SURVEY AND ITS VALUE TO THE FARMER WHO HAS LAND TO DRAIN

By H. C. BRUNSKILL

IN order that the greatest efficiency as well as economy in the installation of a system of drainage may be realized, it is necessary that a rather complete and thorough study be made of the various factors which will aid or made more difficult the task of installation as the case may be. Some of the more important features which should be studied are:

1. The general direction of the slope with respect to the location of the final outlet of the system. Upon this point all plans must be based.

2. The grade or amount of fall available.

3. The character of the soil and sub-soil of the various parts of the tract.

4. The physical features of the tract such as water divides, swales, kettleholes and swamps.

Having assembled the necessary data, it is then necessary to weigh the importance of each factor in its relation to the entire system.

The next step is to provide a working plan by means of which an accurate estimate of the amounts of material and labor which will be required can be arrived at, and the probable cost of the work.

As a practical example of the solution of such a problem I will try and relate the experiences which Mr. J. P. Cornell and the writer had in making the survey of a 500 acre tract of land located about three and one-fourth miles southwest of Derby, a small town in western Pickaway county on the Baltimore & Ohio railroad running between Columbus and Cincinnati. The tract is a portion of a grant of 1500

acres made in 1795. The layout of the tract is typical of the old Virginia military surveys. Very few if any of the lines show any evidence of having been run with the magnetic needle. This gives the entire region a very irregular and patchwork effect.

Topography of the Tract

The tract surveyed is, as a whole, gently rolling although there are a few isolated areas occupied by depressions or swales. The majority of the tract slopes rather uniformly toward the east, the surface drainage eventually finding its way through shallow surface ditches to branches of the Big Darby creek. The soil is of glacial origin and ranges from a light gray clay loam or the higher areas to a black silt loam in the lower parts of the tract. The majority of the soil of the region is naturally very fertile, but due to the fact that the underlying subsoil is of a dense clay, practically impervious, natural drainage is slow and crop returns from the lower areas have been very uncertain. During the wet seasons the lower areas remain wet so long that spring crops are seriously interfered with and much valuable time in the early part of the growing season is lost.

Method of Surveying

A survey of the entire tract was made by the transit and stadia method, all boundaries, and prominent physical features of the tract, such as knolls, depressions, swales and water divides as well as all streams that would serve as outlets for the various parts of the system, were accurately located by stadia measurements and azimuth. The triangulation method

was employed throughout, the tract being divided into three parts by roads, each was surveyed separately. After the stadia survey was completed, a series of levels were taken on each of the three tracts for the purpose of locating the proper points for mains and their outlets as well as to ascertain the grade and direction of slope of the laterals.

The field work was accomplished under rather disagreeable weather conditions. The first day out we were caught in a veritable cloudburst and escaped a good drenching by digging into the center of a corn shock. Later on snow squalls and zero temperature helped to add variety to the experiences.

The Plan

After the field work had been com-

pleted, which was early in February, the next step was the plotting of the map and designing a system of drains which would most economically and efficiently do their work. In all cases where it was possible, the gridiron system was employed, but in a few cases where the surface was badly broken up with swales and knolls a system closely resembling the natural system was employed. The system was designed to secure the greatest economy in installation. The length of all laterals will be in excess of 1000 feet. On laterals of such length a ditching machine can be most economically used.

The installation of the system will require the outlay of considerable capital but the benefits which will result to the soil will practically double the value from the agricultural standpoint.

ACCURATE AND EFFICIENT LUBRICATION

By A. M. HEDGE

AN official of a large automobile concern states that lubrication is the most important consideration in the care of an engine, and a canvass of five thousand automotive engineers reveals the fact that from seventy-five to ninety per cent of all engine troubles can be traced directly to the lubrication. If lubrication is of such paramount importance then in the life of an engine, we may well ask, what is accurate and efficient lubrication? Proper lubrication is possible only by using the right oil, an oil that is correct both in body or type, and quality—each is of equal importance.

The largest refiners of oil have successfully met this proposition by the creation of several types of oil, each adapted to the special type of engine for which it is designed. The right type or body of oil depends upon num-

erous conditions, and it is only after each has been carefully considered that an accurate lubrication recommendation can be made. Some of the conditions which govern the proper type of oil to use are:

- Design of cylinder head,
- Number and position of piston rings,
- Size and fit of bearings,
- Cylinder arrangement,
- Engine speed,
- System of lubrication,
- Method of cooling,

Amount of wear on frictional surfaces.

To give dependable service a motor oil must be of the exact viscosity to reach every frictional surface under all operating conditions. It must be thin enough to flow freely at all temperatures and yet heavy enough to provide

adequate lubrication and the proper piston ring seal.

In an engine, two moving parts must never be allowed to come together, for if they do the result will be excessive wear, heat and consequent loss of power. Even the gears in the transmission of a tractor must never touch, for it is beyond the power of human possibility to polish a steel surface so highly that the microscope will not reveal slight irregularities similar to the lines in the palm of a person's hand. For this reason two moving surfaces must always be separated by a film of oil about one three-hundredths of an inch in thickness, and this oil must have sufficient body to stand the tremendous pressure to which it is subject between the gears in a transmission, while being thin enough to spread freely and evenly, lest some part be left without any lubricant.

An analysis of the conditions governing the correct type of oil to use will show that an engine having a purely splash system of lubrication will require a very light oil, at least lighter than an engine using a full force feed. Also a high speed engine should have a lighter oil than a slow speed one. A kerosene burning engine must have a heavier oil than a gasoline engine on account of the excessive temperatures encountered.

Securing an oil that will give the proper piston ring seal is the most important consideration and the most difficult proposition to solve. While a piston must not fit tightly in the cylinder within which it works, it is called upon to do the difficult work of preventing the gasses within the cylinder from passing down into the crank case, and still maintain the proper clearance between cylinder wall and piston. To seal this clearance is the function of

oil on the cylinder wall. Each stroke of the piston spreads a thin film of oil on the cylinder wall, and each explosion of power stroke uses up approximately all the oil delivered on the previous stroke. So if the oil is not thin enough to spread easily and evenly, some part of the cylinder wall will be left dry, resulting in excessive wear, heat and loss of power. In addition to the loss of power, an improperly sealed piston will allow gasoline that should go into useful power to creep past the piston into the crank case where it dilutes the oil and reduces its lubricating value. A very striking example of this fact was afforded the class in advanced farm power, in the Agricultural engineering department, when they recently took one of the tractors out on the University farm to conduct a plowing test. Owing to the lack of rain the ground was very hard and the tractor refused to pull two twelve-inch bottoms, in intermediate gear. An examination of the engine showed symptoms of a loss of power past the piston rings, and the oil was immediately drained out of the crank case. This oil was very thin and had very much the appearance of being diluted with water. The new oil with which the crank case was filled was a good grade of heavy oil especially recommended by the refiners for use in this particular tractor. When again placed on test the machine pulled the same plows in exactly the same ground where a few minutes before, and with the old oil in the crank case, it had refused to pull, and did it with plenty of reserve power. This is a very concrete example of the importance of good oil in the efficient performance of an engine. Not only does an improperly sealed piston allow the wasting of fuel that should go to useful

(Continued on page 440)



OF
OHIO STATE UNIVERSITY
A Medium for Exchange of Ideas Between College and Farm

EDITORIALS

PURE BRED SEED

Today those interested in the highest type of animal production are preaching the gospel of the pure bred sire. May their success be immediate and unbounded. But why stop with pure bred animals alone? The chances for improvement in the direction of better seeds are almost as great. Far too much seed of doubtful purity, of low germination, and of unknown yielding capacity is every year selected as the foundation from which must come the next crop. Seldom does a year pass without every farmer suffering some reduction in his profits because of the use of inferior seed. It is easy to say that anything that will grow is good enough for seed but it is more profitable to consider nothing but the best obtainable as being good enough. And it is upon profits that the success of a farmer and the comforts of his family depends. So why not make our efforts include seeds as well as sires and try for one hundred percent pure bred farms?

H. L. G.

THE SENIOR MEMORIAL

As the time of year approaches for the furtherance of the familiar old tradition of giving a Memorial to the Alma Mater, those familiar with this tradition are awaiting with interest the action of the Senior Class upon this, the most important event in which the class as a whole can act.

At a meeting called for this purpose 2070 of the class assembled and proceeded to acquit themselves of this task in a far from creditable manner. Selfishness was the keynote of the meeting. Rather than favor anything beyond their immediate comprehension they voted for some tangible object which they could in future years touch and say "I helped buy this." The Alumni fund proposition was turned down though many of the leaders on the campus favored it. President Thompson even remarked that when put on a business basis the Alumni Fund proposition presented an opportunity for service unequalled by anything offered by any preceding class. It is to be hoped that before too late the seniors will perceive the folly of their action and proceed to justify their honored position as sons and daughters of Ohio State.

PROJECTS

All the counties in Ohio with the exception of eight are carrying on Boys' and Girls' Club work for 1921. In most of these counties, club work is one of the main projects of the farm bureau program. In Ashtabula, Cuyahoga, Summit, Tuscarawas, Muskingum, Crawford, Wood, Auglaize, Montgomery and Hamilton counties, permanent county leaders are devoting full time to the development of club work within the county. Sandusky and Portage counties have temporary leaders.

The projects this year are pig production, poultry, beef calf, dairy calf, food, clothing, corn, potato, sheep and gardening. Each county is promoting from one to six of the above projects depending upon the length of time the work has been established in the county and upon the support given to the work.

Most counties have the work definitely set up by community and county committees that are assuming the responsibility for the development and progress in the communities. What is better for interesting Young America in farm life than this work?

G. W. T.

GRADUATION

How many college men today—entering upon the last lap of their college career—are battling with that age-old problem, "Where do we go from here?" How many men who have long since entered what we in school look upon as the outside world, are still fruitlessly struggling with that same problem! Statistics in both cases would be appalling were they spread out before us without a record of those happy instances where the problem has been satisfactorily solved to lend optimism to the outlook.

These "happy instances" represent the men and women whom broad minded people point to and say, "There is a success!" To be among them is the cherished ideal of all students who have gotten out of their college days the incentive which that period of their life is intended to foster.

Grads, be an honor to your Alma Mater when you have gone out and in doing so you will be a true SUCCESS,—seeing more in life than the mere dollar. For, after all, what is true wealth but the good will of humanity.

G. W. T.

AG. BANQUET

This tradition of many years standing is again an essential part of the students' life. The enthusiastic cooperation of every Ag. student is evidence that we can cooperate successfully. Ag. Open Nite, held last fall, was even eclipsed by the Banquet. Assistant Secretary Ball and Mrs. Calvin as the principal speakers, followed by practiced entertainers from the Ag. College, was a new and appreciated change from the old method of after-dinner jokes by students. Every one enjoyed themselves, the New Southern gave excellent service, in short the perfection of this year's annual "roundup" should prepare us for a sweeping realization of our aspirations for future years.

FARM CROPS

H. G. DOSTER, Editor; ROBERT MAYNE, Assistant.

THE OHIO SEED IMPROVEMENT ASSOCIATION

This association which has been in existence for some time, was reorganized in 1917. Since that time the membership has been steadily increasing until at the present time it has one hundred and thirty-six members.

According to the constitution of this organization its purpose is to encourage the use of pure seed of the best varieties throughout the state. Thus displacing the vast number of mongrel varieties of the various grains that are being grown. Take wheat for instance, in many cases the wheat grown, for there is no name for it, is mixture of most every variety that was ever heard of: beard and beardless, soft and hard winter and spring varieties, in fact, a regular conglomeration. Now what the association is attempting to do, is to reduce the number of varieties thus getting a few good varieties of high yielding and high quality of wheat, and the other grains, corn, oats, barley, soy beans and rye.

The president of the association is Charles Heimberger of Pataskala, vice-president E. F. Johnson, and secretary-treasurer, Wallace E. Hanger of Columbus, who is professor in the farm crops extension department.

Any one who is interested in promoting the objects of the association and who pays the membership fee of \$1.00 per year, may become an active member of this association.

Any member who has a field of grain that he thinks will make good seed or is sufficiently pure enough to pass the requirements, which are a minimum of $\frac{1}{2}$ of 1 percent pure seed, and must be

free from disease. A man is sent to the field, who is an authority on pure seed, about the time the seed is ripe. He determines whether or not the field under observation will be recommended by the association. If the field passes inspection, a printed list containing the name of the man, his address, variety and amount of grain for sale. For these services performed by the association the owner pays a fee of \$1, thus making the total annual fee two dollars per year.

Besides functioning in this manner, the Ohio Seed Improvement Association is instrumental in promoting pure seed legislation. Furthermore, the annual corn and grain show is held under its auspices.

SOY BEANS FOR OHIO

According to statistical reports Ohio is greatly increasing her production of soy beans. Gallia county leads all the counties in the state, having 349 acres devoted to the growing of this legume, while Washington county follows closely with 323 acres.

The reason, or reasons, for this increased production of this important legume are quite obvious. The largest use at the present time is a substitute for clover and grass where there have been failures of new seedings or where, for any reason, there is a hurry up call for an unusual crop which will furnish a good yield of hay of high quality. Soy beans are being substituted for oats in such standard four-rotations as corn, oats, wheat, and clover and potatoes, oats, wheat and clover likewise in some three year rotations. The great value as a forage crop for

hogs cannot be disputed. As a supplement for protein feeds, they rank very high.

Besides the above reasons soy beans are adapted to most all types of soil and climatic conditions found in Ohio. Unlike other legumes they have a marked effect on the physical condition of the soil. This is probably due more to the fact that they are often cultivated, whereas, other legumes are not as a rule.

There are several ways in which they may be grown; sown with corn planted in rows, $2\frac{1}{2}$ -3 feet apart or sown broadcast. Inasmuch as soy beans are susceptible to frost, they should be planted so as to avoid the early frost. A good rule to follow is to plant about two or three weeks after corn is planted. Of course this depends on the locality you are in more than any set rule.

TREAT SEED OATS FOR SMUT

The old saying, "that an ounce of prevention is worth a pound of cure," has a practical application. Too often we are inclined to neglect treating our seed oats for smut, on the assumption that, inasmuch, as we did not have smut in our oats last season we won't have it this season. It is possible that we may be right in our assumption but, on the other hand, the risk is too great to take the chance. Since the cost of material to treat the seed is small and the labor required is also small, any farmer who grows oats can afford to insure a crop of oats being free from disease.

The yield and quality of the oat crop is also materially increased. An easy and effective method of treatment is to sprinkle the seed oats with a solution made by adding 1 pound of formaldehyde to 40 gallons of water. After the

trash and smut balls have been removed by fanning, the seed should be spread on a clean floor, thoroughly sprinkled, and shoveled over until all of the grain is well moistened. Next cover with blankets or canvas and allow it to stand for several hours. It can be sown at once or spread in a clean place to dry. The rate of seeding should be somewhat increased to allow for the swell of the seed. The treated seed should not be put in sacks, bins, or seed drills unless they have been previously treated with the formaldehyde solution.

SOY BEANS A SUBSTITUTE FOR CORN

The agronomy department of the Ohio Experiment Station, strongly advises the use of soy beans as a substitute for corn. This crop is recommended for sections where it may be impossible to plant corn this season, or for fields that may be plowed too late for the corn crop.

One very important thing about soy beans is their ability to take nitrogen from the air and store it in the roots where it is used for the succeeding crop. Soy beans may be planted in May or June, and if given proper attention will produce a good crop in time to permit the ground to be seeded to wheat in the fall.

On most soils it is necessary to inoculate the first time this crop is grown. Some farmers inoculate by taking the soil from the fields where soybeans have grown, drying it in the shade and mixing it with the beans as they are drilled. Soy beans respond readily to heavy applications of acid phosphate or manure.

While it is possible to wear our old clothes, we cannot burn last winter's coal or gas.

TIMELY SOIL TOPIC

Soil Temperature—There are many things if taken separately might convince us that the climate of Ohio was changing. The growing season appears to begin two or three weeks later than in previous years. Oats are not sown and corn planted as early as before in some parts of the state. Meteorological observations do not warrant this change, for we have the same amount of sunshine and rainfall. Then it must be within the warming up of the soil itself. Below 32 degrees F. all organisms in the soil are inactive. The nitrifying bacteria are most active in a temperature of 98 degrees F. The average minimum temperature of seed germination is 45 degrees F., the optimum being 85 degrees and the maximum 104 degrees. When the temperature of the soil falls below minimum, the seeds lay dormant and may become prey for moulds and vermin.

When ice melts large amounts of heat are absorbed without a raise in temperature in the water formed. If this condition exists in the soil large amounts of heat are taken up by water in undrained soils, thus holding down their temperature. The amount of water in the soil that might freeze should be limited to the minimum. This is the importance of drainage. Drained and undrained soils have been found to vary 10 degrees in temperature. Five times as much water is required to raise the temperature of one pound of water as one pound of soil. Removing the water then lowers the amount of heat necessary to raise the temperature of the soil. The darker the color of the soil the more the number of sun rays absorbed and not reflected off. Organic matter in the soil gives a marked dark color.

Heat reaches the lower layers of soil by induction. Soil is a poor conductor, but compacting increases conductivity. Water warmer than the soil carries heat to the lower layers. There is a tendency toward an equilibrium and the heat is taken up by the soil from water. Water from a drain tile has been found to be 20 degrees lower in temperature than the original rainwater. Thus warm showers contribute to the soil more than mere moisture.

So if the growing season is shorter, we may conclude that it is due to poor drainage. Exhausted soils are lower in organic matter than the virgin soil and heat taken up by cold drainage water. Water is the greatest influencing factor in soil temperature. All good soil practices tend to increase the length of the growing season.

Renick W. Dunlap, '95, has been operating a sixty-five thousand acre live-stock ranch in Florida, for the past four years. He has returned to his native state and will now spend a part of his time in Ohio and Florida. Besides being a successful rancher, Mr. Dunlap is a football enthusiast and has witnessed all the Scarlet and Gray battles this season. He was captain of the team in '95.

Ruth Tyler, '20, is located at Plattsburg, Ohio, teaching home economics.

E. C. Cotton, '05, a graduate of the horticultural department, is now the chief of the bureau of industry of the State Department of Agriculture. His headquarters are in the state house, Columbus.

Stanley B. Stowe, '08, is county agent for Marion county, Ohio.

Richard H. Shields, '07, is United States Army assistant development expert in animal husbandry at Camp Grant.

SHEEP SHEARING CONTEST

By J. G. BATES

THE annual "Sheep Shearing Contest" was held in the Judging Pavilion on April 13, under the auspices of the Saddle and Sirloin Club.

There was an attendance of approximately 300 and the competition in all contests was very keen. The following are the results of the respective contests:

No. 1. Shearing with hand machine. Open to students only.

Contestants	No. of Points
W. B. Herbert, Ag. 4	78.5
H. B. Rowland, Ag. 3	76.5
E. D. Noffsinger, Ag. 3	64.5

No. 2. Shearing with hand shears. Professionals only.

George A. Shaw, Marengo, O.	95.25
Ed. Wilcox, Delaware, O.	91.00
H. E. Lavelly, Grove City, O.	89.50
H. Wilcox, Delaware, O.	86.70

No. 3. Shearing with power machine. Professionals only.

F. P. Elliott, London, O.	89.00
L. R. Daugherty, Fredericktown	88.00
Fred Tussing, Reynoldsburg, O.	87.50
J. G. Halway, London, O.	83.50
George A. Shaw, Marengo, O.	80.00
L. A. Long, Loudonville, O.	67.00

No. 4. Catching, casting, shearing and tying. Open to students and professionals.

F. P. Elliott	98.00
George Shaw	96.00
E. D. Noffsinger	95.00
L. R. Daugherty	93.00
J. G. Holway	92.00
F. W. Tussing	91.50
H. B. Rowland	87.50

The basis of grading was as follows:

Quality of shearing	35
Number of cuts	10
Handling of sheep	20

Speed in work	15
Handling of shears	5
Tying of fleece	15

The number of points given above constitute a total of 100 or a perfect score. This scoring was used in the first three contests while in the fourth an allowance was granted for the catching and casting of the sheep.

J. W. Hammond of the Ohio Experiment Station and Delmer C. Jobe of Cedarville, Ohio, were the judges for the first and third contests, while J. F. Walker, of Gambier, Ohio, secretary of the Ohio Sheep and Wool Association, and George E. Helzer, of Lafayette, Ohio, judged the second and fourth contests respectively. The prizes awarded were as follows:

No. 1. Name of the winner to be engraved on the Ohio Farmer Cup, which was presented to the high man in points. First Prize. \$3.00 second prize, and \$2.00 third prize.

No. 2. \$5.00, \$3.00 and \$2.00 respectively.

No. 3. \$5.00, \$3.00 and \$2.00 respectively.

No. 4. \$3.00 and \$2.00 respectively.

The Saddle and Sirloin Club in conjunction with the Columbus Riding Club is planning to hold the annual Horse Show in the Coliseum on the State Fair grounds on May 20 to 21. Officers of the club for the second semester 1921 are as follows:

President	C. Victor Kendall
Vice-president	Robert H. Hall
Secretary	F. W. Corcoran
Treasurer	H. H. Jones
Sergeant-at-Arms	Ray Spiker
	J. G. B.

ANY GENTLEMAN CAN

Any gentleman can swear, get drunk, tell stories that would lower him in the estimation of his mother and wife, and go where he would be ashamed to be seen by the boy he loves—but he won't.

Any gentleman can drive a sharp bargain; he can take advantage of the other man's necessities; he can drive him into a corner; he can rub his hands gleefully and say to himself as he sees him writhe, "Business is business"—but he won't.

Any gentleman can kick a dog, abuse a horse, misuse a child, laugh at another man's mistakes and devilishly gloat over another man's failure—but he won't.

Any gentleman can grow cynical, sour and pessimistic; he can feel that everybody is against him and he against the world; he can scoff at all good things, ridicule your religion and damn your judgment—but he won't.

Any gentleman can say harsh, sarcastic and cruel things; he can crush flowers and fertilize weeds: he can stab you with words—but he won't.

Any gentleman can make this old world, this topsy-turvy, this greatly misunderstood, this to finites not-to-be-understood world, a far better place because he chanced to pass along this way—and he will!—Indiana Farmers' Guide.

The department of agricultural engineering recently received a Milwaukee air power water system from the Milwaukee Air Power Pump Co. This plant is being tested with other farm water plants at the present time. It is quite different from the other plants under test—in that it is strictly a pneumatic system and delivers water direct from the bottom of the well to the faucet.

They can, because they believe they can.—Virgil.

"Be is ever so homely there's no face like your own."—Student Life.

WITH AND WITHOUT

The photographer's clerk was very pre-occupied in showing some samples of work to prospective sitters when Patrick Maloney stalked into the studio and intimated that he would like to know what the pictures were worth.

"Like that, two dollars a dozen," said the girl, handing him one.

Pat gazed long and earnestly at the photograph of a very small baby sitting in a wash basin.

"Shure, now," Pat shyly asked, "phwat would it cost wid me clothes on?"

HE MISSED IT

Once a year the newsboys of London are given an outing some place on the Thames River, where they can swim to their heart's content. As one little boy was getting into the water, his little friend said:

"Johnnie, you're pretty dirty!"

"Yes," replied Johnny, "I missed the train last year."

EXALTED

Dibbins was dining with some people who were proud of the recent elevation of a member of the family to the House of Lords.

"This," said the hostess, "makes the second of my husband's family in the peerage. Have you any relation in the House of Lords?"

"No!" said Dibbins, "but I've two maiden aunts in the Kingdom of Heaven."

VOCATIONAL AGRICULTURE

BOYS' AND GIRLS' CLUB WORK, ETC.

E. B. BARKER, Editor; J. A. MALICK, Assistant.

NEW DEPARTMENTS

With the increase in the number of available teachers for positions in departments of vocational agriculture, Professor W. F. Stewart, state supervisor of agricultural education, proposes to ask for the establishment of twenty new departments in as many different high schools of the state. This will bring the total number of departments to about 85 for the next fiscal year. Applications have been received from 40 or more high schools and a selection will be made from these in locating the new departments. The total funds available next year for distribution in Ohio for the teaching of vocational agriculture will approximate \$116,000.

The following student teachers have completed their training in supervised teaching in the training schools: Mr. Campbell at Worthington; Mr. E. B. Barker, Hamilton township; Mr. Bricker at Grove City. The following are about to engage in this phase of their training: Mr. Wight, Mr. Glunt and Haskins.

Training of soldiers under the direction of the federal board has been placed under the direction of a faculty committee consisting of Prof. F. W. Ives, Dr. C. W. Gay, W. F. Stewart, T. G. Watson, and Mr. Clawson. Prof. Stewart has been named director of the work in preparatory classes which is in charge of special teachers. At present 32 soldier students are registered in the college of agriculture.

DON'T KICK

There ain't no use in kickin' friend,
When things don't come your way;
It does no good to holler round,
And grumble night an' day.
The thing to do is curb your grief,
Cut out yer little whine;
And when they ask you how you are,
Jest say, "I'm feelin' fine."

There ain't no man alive but what
Is booked to get his slap;
There ain't no man that walks but what
From trouble gets his rap.
Go mingle with the bunch, old boy,
Where all the bright lights shine,
And when they ask you how you are,
Jest say, "I'm feelin' fine."

Your heart may jest be burstin' with
Some real or fancied woe,
But when you smile the other folks
Ain't really apt to know.
The old world laughs at heart aches,
friend,
Be they your own or mine;
So when they ask you how you are,
Jest say, "I'm feelin' fine."

—*Forbes Magazine.*

FURTHER NOTICE

It might be said that we did not mean by the article in the March issue of this magazine that the Boys' and Girls' Club Work Department of Ohio was not doing its duty. According to the Smith-Lever Bill they cannot work in the cities and there is no provision made for these boys and girls. It is for these that something should be done.

WHEN TO APPLY LIMESTONE

The growing need of lime for Ohio soils, and the growing realization of that need, is resulting in an ever-increasing demand. Formerly the small volume of limestone handled made it possible to have the material shipped and hauled from the car to be spread on the field just before planting corn or wheat. The present large tonnage makes it impossible for the manufacturers to adjust production to a demand that is concentrated in a few days in spring or summer. It is equally impossible for the railroads to move all the limestone required in the short time during which the demand is keenest.

A remedy for this has been found in building storage sheds or warehouses in which the limestone may be unloaded and held till the farmer is ready to haul. It will be seen that if the spreading of limestone were more of a year-round affair these storage bins or sheds would be able to handle a larger tonnage.

Myron A. Bachtell, in "Timely Soil Topics" for October, shows that limestone may be profitably spread at other times than those now in vogue. Used as a top dressing on wheat, growing corn, or sod, it has been found quite effective. The old practice of spreading at planting time is good if convenient. But experiments and farm experience indicate that limestone may be profitably spread on some part of the farm at almost any season. To do so is good management. It will ultimately reduce the price, it will reduce storage costs, and it will reduce hauling costs by making it possible to haul the limestone when returning from marketing farm products. In addition it will encourage the use of limestone by making it possible to apply it at convenient times.

NAME GRAPE VARIETIES FOR HOME VINEYARDS

Investigations in grape culture by the department of horticulture at the Ohio Experiment Station show that there is a good home market for locally-grown grapes in many Ohio towns.

A few of the varieties which the Ohio Experiment Station found adapted to this system are Green Mountain, Brighton, Worden, Delaware, Concord, Niagara, Moyer, Diamond and Captivator.

A bulletin on commercial grape growing, giving methods of pruning, fertilizing and varieties to plant may be secured free by writing to the Ohio Experiment Station, Wooster.

FARMERS SHOULD SPRAY DESPITE LOSS OF FRUIT

Despite the heavy loss of fruit caused by spring frosts, spraying authorities of the State urge orchardists to carry out their spraying programs as contemplated for the year.

Three diseases, apple scab, black rot and apple blotch have developed so rapidly that they have become a serious menace in many sections. To spray during an off-fruiting year will aid greatly in cleaning out these diseases, it is stated.

Where there is no fruit to be injured by spray russetting, Bordeaux mixture may be substituted for lime-sulphur in the petal fall spray as well as the July spray.

Bordeaux mixture has the effect of a complete sanitary measure in controlling apple diseases.

T. I. Smith, '14, is local sales agent for the Central Chemical Co. at Hagerstown, Md. He also served as editor of that company's publications.

AGRICULTURAL ENGINEERING

G. W. TIMMONS, Editor; R. J. MATSON, Assistant.

WEAKENED BY RUST

Many a piece of farm machinery is broken in use, at a busy critical period, because the part has become weakened by rust.

Nowadays when a machine breaks it is not only the cost of replacement to be considered, but the machine may be out of service for several days or weeks because the dealer's stock of parts is low and completely out on some items.

And it isn't the dealer's fault either in most cases. He has orders in for short stock parts, but ordering is one thing and getting orders filled is something else, as all machinery dealers and their customers know to their sorrow.

All farm machinery should be kept painted. Reduce breakage to the minimum. Parts will break often enough when machines are handled with the utmost care, but just now when replacements are so expensive and so difficult to get promptly regardless of price, the least the farmer can do is to guard against this unnecessary weakening of essential equipment, by allowing rust to set in on it.

Fortunately paint isn't scarce. It takes very little time to apply it and the cost is nothing compared to the loss of several days use of an important machine at a critical period in planting, cultivating or harvesting time.

Great bluffs from little study grow.

Flirtation is attention without intention.

The most curious thing in the world is a woman who is not curious.

INFLUENCE OF TRACTOR ON THE USE OF HORSES

When the farmer buys a tractor for the first time, he generally has two questions foremost in his mind.

First. In what operations will it displace horses in whole or in part?

Second. How many horses will it displace on my farm?

It is a hard matter to state just what the answer would be for each individual buyer, but the U. S. Bureau of Farm Management has tabulated the results of the personal experience of 191 tractor owners in the corn belt states. Figures show that the tractors have displaced 25 percent of the horses in these farms.

After these farmers had purchased tractors the average increase in size was 22 acres per farm. The acreage per horse before and after the purchase of a tractor was 35.5 and 47.8 acres, respectively, an increase of 12.3 acres per horse. The horses left on the farms did 75 percent of the tractive work, while the tractors did the remaining 25 percent.

The most important effect of the introduction of the tractor on the horse-labor schedule is the shifting of the peak load of the horse labor from the spring season to the corn cultivating season. At the cultivating season there is also certain other farm operations which require drawbar power at the same time, some of which cannot be done by the tractor. It is therefore a safe rule to keep enough horses to cultivate the corn and do other necessary work which must be done at the same

time, but which cannot be accomplished with the tractor.

All of the reports emphasized the fact that the great advantage of the tractor lies in its ability to save time and labor at a critical season when time is precious and the success or failure of the entire crop hangs on the speed with which it is handled.

RALPH J. MATSON.

ENG. DEPT. TESTS

FARM LIGHTING PLANTS

The Dept. of Agr. Eng. recently invited 23 makers of farm lighting plants to participate in a comparative test. The companies represented at this test were the Delco, Phelps, Swartz and Willys. Three Delco plants were tested, which were rated at 600, 850 and 1250 watts respectively. All the plants were given a 28-hour test except the Willys, which was run for 8 hours.

The Delco plants and the Willys burn kerosene and are air cooled while the Swartz and Phelps burn gasoline and are water cooled. An average of the different plants shows the air cooled plants to use 4.77 times as much lubricating oil as the water cooled plants.

The cost of lubricating oil and fuel used per K. W. hour, for the different plants, was as follows: Delco, 7.02, 6.94 and 6.73 cents respectively. The larger plant producing the more economically. Phelps, 7.83 cents. Swartz, 6.47 cents, and Willys, 7.75 cents. The cost of gasoline was 28c, kerosene 20c, and lubricating oil \$1.25.

These tests were run under the supervision of Professor Ives.

AGR. ENG. 101

Student: Why do motors run better at night?

Prof.: There is generally more spark.

POINTERS ON PAINTING

Paints and painting cost less than repairs necessitated by decay or disintegration.

There is no such thing as an all-service paint. Paint should be selected according to the material to be painted and the conditions under which it must give service. The wear on a floor is more severe than on a wall; hence the floor calls for a tougher more elastic paint.

Painting should not be done when the temperature is lower than 50 degrees F., as the paint will not flow well. It is impractical to paint a hot surface. The old painting axiom is: In Spring and Fall follow the sun; in Summer, follow the shade.

Outside painting should be done in dry weather. Surfaces should not be painted when wet.

Surfaces to be painted should be gotten as smooth and clean as possible. They should be free from grease. If painting new wood knots and sappy surfaces should be shellaced first. If painting over previously painted surfaces, all blisters and loose or peeled spots should be scraped or burned clean. A brushing with stiff wire brush followed by sandpaper is good practice.

A priming coat usually pays for its cost. A firm base for the final coats is very essential to insure long service. The primer should be thin enough to penetrate the lumber; it should be well brushed in.

Only pure linseed oil or pure turpentine should be used to thin paint.

Although frequently used, ochre is not a good primer. The primer should be of as good quality as the body coats, but reduced to the right consistency. Elbow grease is a very good thing to

use on paint, especially the priming coat.

If the paint is cracked in small hair lines which do not go through to the wood, reduce the first or priming coat with equal parts of raw linseed oil and turpentine, in order to penetrate clear through to the wood. This only applies where the old paint is well bound to the surface.

If the old paint does not adhere well, scrape the surface with a stiff wire brush to remove all scale, then dust with a stiff brush.

Spots from which much of the old paint is scraped should be touched up with a thin coat of paint, reduced with turpentine.

After this has dried, the surface is ready for the first coat.

Paint may peel from any one of several causes, but the most frequent cause is the improper application over a damp or frosty surface.

Paint that is peeling rolls back from the surface in thin scales. A coat of paint put over a seemingly good surface will sometime peel down to the bare wood or to the priming coat, showing that the old paint has lost its grip.

Be on the look-out for this condition when re-painting surfaces. The old paint surfaces should be well wire-brushed and dusted, after which the bare spots should be touched-up with a thin coat of paint, reduced with pure turpentine.

When these spots are dry, paint over with the first coat.

Blistering is easily recognized and is caused by moistures having come out of the surface under the paint or from priming with cheap ochre.

When this condition exists, wire-brush and dust the surface, then wash with turpentine to cut any grease or excess oil which may be present.

After this is dry, proceed as directed for first-coat work.

When the paint cracks into large blocks of every conceivable shape (becoming alligatoried, so-called), it is caused by the application of heavy, non-drying undercoats, "fat" paint, the use of adulterated oils or from painting over cheap ochre priming. Boiled linseed oil in the under-coat will also produce this condition.

The only treatment is to burn and scrape off the paint down to the bare wood.

Proverbs

Old friends are like cheese—the strongest.

Modern woman wants the floor but she doesn't want to scrub it.

Exams are like the poor—we have them always with us.

The Spice of Life

Julius Caesar (having cut himself while shaving): "——???!!!!"

T. Labinius — "What ho, my lord, what ho?"

Jule—"Gillette, d——d Gillette!"—Ex.

If a fellow tries to kiss a woman and gets away with it, he's a man; if he tries and doesn't get away with it, he's a brute; if he doesn't try to kiss her but would get away with it if he tried, he's a coward; and if he doesn't try to kiss her and wouldn't get away with it if he did, he's a wise man.—Selected.

P. F. Dregoe, ex-'20, is manager of a large farm at Marion, Ohio.

Frank E. Meckel, '17, is editing the Agricultural Engineer Departments of Capper Farm Papers, Inc., at Topeka, Kansas.

Pal O' Mine



BY H. A. ERSIG.

They wrote me that you westward went,
It hit me hard, my head in sorrow bent
For you, Old Pal o' Mine.

I'll miss your fawning, joyous leap,
Your friendly ears in which my troubles went;
Your great brown eyes in which there creep
Joys and sorrows that I feel;
No nobler, truer friend or real
Than you, Old Pal O' Mine.

I'll miss the beauty of your point,
Like stone, that artists fain would paint or carve;
I'll miss your nose, so keen and instinct true,
A setter, thoroughbred. I'm proud of you,
Old Pal o' Mine.

I'm sorry that I was not there
To wish you luck, but after all
You understood (you always did) I answered duty's
call.
No martial music o'er your bier;
No one to laud your comradeship or shed a tear
For you, Old Pal o' Mine.

You'll wait for me, I know you will,
Through life's long journey and until
Death's friendly clasp sends me along the western
trail,
I'll find you waiting there, you never fail,
Old Pal o' Mine.

—*Outing.*

THE CAMPUS ECHO

H. W. HARSHFIELD, Editor; MERRILL CONN, Assistant.

STATE CAMPAIGN TO BE CONDUCTED

Attempt on the part of Agricultural College to interest farmers in a state-wide campaign is planned for the month of May to be carried on by the Animal Husbandry department in connection with the United States department of agriculture. The campaign is for the purpose of interesting the live stock breeders of Ohio in the use of pure-bred sires. Prizes are to be offered to counties showing the best results.

ANNUAL AG. BANQUET

The annual Ag. banquet was held on the 22nd of April at the Southern Hotel. Before the war this was an annual event but during and since the war it has been dropped. This was the reviving meeting of the former annual affair and a large representation of the Agricultural College was there.

COURSE OFFERED IN INCUBATION

Twenty-five students are enrolled in a course in incubation under Prof. Freeman S. Jacoby of the department of animal husbandry. The course lasts one month and consists in looking after the incubator until the eggs are hatched. The object of the course is to teach students how to operate an incubator.

ADDITION TO THE EXTENSION DEPT.

The extension department of animal

husbandry has added a new member to the staff. Mr. Paul Gerlaugh formerly county agent in Wayne county is now doing extension work here, in connection with that department.

SOIL PUT UP IN CANS

The latest in the science of preserving in cans. Ever hear of it? Sealing soil in quart cans, so it won't spoil. It's being done. In the stadium office is a stack of over 100 tin cans, containing soils from the stadium site.

These samples were taken in order to make a careful test before the construction of the foundation begins.

DIXIE ANNA

Dixie Anna is one of the most recent additions to animals on the University farm. This six-year old Percheron mare was bred by George A. Dix of Delaware county, from whom she was purchased. This mare was second-prize aged mare at the Eastern Percheron Breeders' Show at the Ohio State Fair in 1920. She was also first-prize aged mare, senior champion mare, and grand champion mare at the Indiana State Fair in 1920.

TOP COL'S BONES

There are soup bones, bone heads, and bones that you roll but Top Col's bones are the ones that are most noticeable around the animal husbandry department. In the history of ancient animal breeding accounts are given where the famous breeders kept the skeletons of picked specimens of their

greatest animals. These were kept both as a trophy of their achievements and as a model for future breeding. They had nothing on the animal husbandry department of the Ohio State University. The skeletons of this famous Duroc-Jersey boar stands in a glass case in the judging pavilion as a corner stone to the living progeny that are now recognized by all breeders of Duroc-Jersey hogs. With apologies to John Brown we may say, "Although his bones are in a case, his get are marching on."

THE VALUE OF SOIL ANALYSIS

It is the impression of the average farmer that if he can have his soil analyzed, it would be the immediate guide to fertilization treatment and the secret of large crops. Analysis of the soil alone could be very easily misleading, for the crop and many other physical factors should be considered.

Prof. F. E. Bear, in the August number of the Monthly Bulletin of the Ohio Experiment Station, states: "The amount of plant food in the soil which is available at a given time depends largely on the foraging power of the plant grown and the treatment the soil has received and is receiving from the man who farms it."

The outstanding values of soil analysis as enumerated by Prof. Bear are:

1. It is a guide to the planning of permanent systems of soil improvement.
2. It is of value as an index to the direction in which the supply of plant food is moving.
3. It offers a basis for the interpretation of experimental data from different soils.
4. It is valuable as a guide to the application of results obtained on experimental farms.

5. It gives definite information as to the potential fertility of a soil.
6. Chemical soil analysis is of value to the investigator.

THINKING

If you think you ^{are} beaten, you are;
 If you think you dare not, you don't;
 If you'd like to win, but you think you can't

It's almost a cinch you won't.

If you think you'll lose, you're lost,
 For out of the world we find
 Success begins with a fellow's will—
 It's all in the state of mind.

If you think you are outclassed, you are;

You've got to think high to rise,
 You've got to be sure of yourself before

You can ever win a prize.

Life's battles don't always go
 To the stronger or faster man,
 But sooner or later the man who wins
 Is the one who *thinks* he can.

BULLETIN TELLS HOW OHIO FARMERS ORGANIZE

"Organization Among Ohio Farmers" is the subject of a bulletin recently issued from the Ohio Experiment Station, Wooster.

It is compiled by H. E. Erdman, department of rural economics, Ohio State University, Columbus, and deals with material gathered by that department in a study of rural organization in Ohio. Descriptions of farm organizations include mutual service companies, elevator companies, livestock shippers and cow testing associations that operate in the State.

The bulletin is mailed free to Ohio residents upon request to the Experiment Station, Wooster.

HOME ECONOMICS

COLOR SCHEMES

FOR THE HOME

Perhaps we all know that the interior of a room must have a background to properly set forth any furnishings which may be added. This background should include walls, ceiling, woodwork and floors and should be treated as the shell for whatever may be added.

When rugs and furnishings are ornate and full of color, draperies should emphasize this background. If they are simple and quiet in color the draperies may be of blended stripes or contrasting shades.

Woodwork should be a shade or two darker than the walls, draperies might well blend with it. Where brighter furnishings need a neutral setting tans and grays are generally selected. In small houses or rooms, the effect of space is heightened if the entire floor including halls is treated in the same coloring, each room of course having distinctive features.

If one is redecorating, the place to start should be the background. If the paper is too good to remove, it should be cleaned with the usual cleaner. A fresh coat of paint on the woodwork, the floor done over, the radiators regilded or silvered, as the case requires, and the shell of the room is renewed ready for furnishings.

There are new stenciled slip covers, curtains and table covers, which are attractive and interesting. The only color on the neutral tinted crash is the coloring of the stenciled pattern. Pillows made or recovered in shades of this same color could be used. It is possible to remake pillows into some

of the new shapes, as the heart-shape, saddle-bag, oblong, roll, and Chinese double pillow and so present a welcome change from the old square models.

Brown and yellow are both pleasant and satisfactory colors for many color schemes. They seem most acceptable as a color scheme one does not tire of, for dining rooms. After the dining room walls have been covered with deep soft yellow paper, and the ceiling a deep cream, if oak the woodwork and floors may be freshened with oil. If not of oak they should be painted black or the deepest shade of brown which looks black at night.

In the shell rich brown draperies would look well, brown leather furniture, yellow silk under the plain deep cream net curtains, with yellow dishes, flowers, etc. On a Dutch shelf a few chosen pieces of yellows or browns, a piece or two of old blue with bits of brass or pewter might be used. On the floor should be laid a durable brown rug of woven flax.

A most happy combination for a dining room may be had in blue and yellow, of the right shade of blue is obtained. Such a blue as that of Chinese dishes, cottons and silks are best, for it does not fade with use. A similar background to that used in the first dining room may be used in this. Instead of brown hangings, however, blue should be used, cream net curtains, blue cushioned chairs, a blue flax rug, with blue and white dishes and linens. Yellow flowers, brass jars and bowls and on the Dutch shelf Chinese pottery, yellow vases and a bit

of red lacquer for contrast may be added.

A pleasant welcome is always extended from a yellow and brown hall, while a gray one is usually cold. Yellow walls, cream ceiling, brown draperies, where needed, a carved settle with round or oval mirror above, a yellow candle at either side, a couple of high-backed chairs with yellow tapestry seats and a brown flax runner or rug completes this charming hall. These could be elaborated some if one wished to spend more money on it.

ORIENTAL RUGS AND THEIR USE IN THE HOME

Is it true that Oriental rugs are good in all rooms and all homes, as many people, particularly rug salesmen, would have us believe? In my opinion they are not, for everything in the room must be in the proper relation, and a luxurious Oriental rug calls for furnishings which, with the rug, tend toward unity and harmony. The Oriental rug, however, must still remain the striking factor in that room. Often we see a rug which serves as a wall hanging, but if this does not cover the wall completely and does not maintain the essential unity with the floor coverings and furniture, it is out of place.

I know of one home where the walls, chairs, floors, tables and even the beds are covered with rugs from the far East, regardless of harmony, the season of the year, or personal equation of guests who are forced to remain in an over-stuffed room. Very few people know the real value of Oriental rugs and it is quite difficult to discriminate between the poorer grades and those of great value. It is seldom that we find an expert authority on the subject. A

certain woman prided herself on her knowledge and selection of rugs and displayed them at every opportunity. Upon her suggestion, a rug expert called, and much to the dismay of the hostess, she was told that her rugs were practically valueless. She had paid thousands of dollars for her treasures, which in reality were worth only a few hundred. It is said that the most valuable rug of all was one which was draped over the divingboard of the swimming pool in the basement. The most important principle in selecting rugs is that they be harmonious, restful, and a good background for furniture, even though they be of a plain domestic variety. M. M.

POMOLOGICAL SOCIETY MEDAL COMES TO OHIO

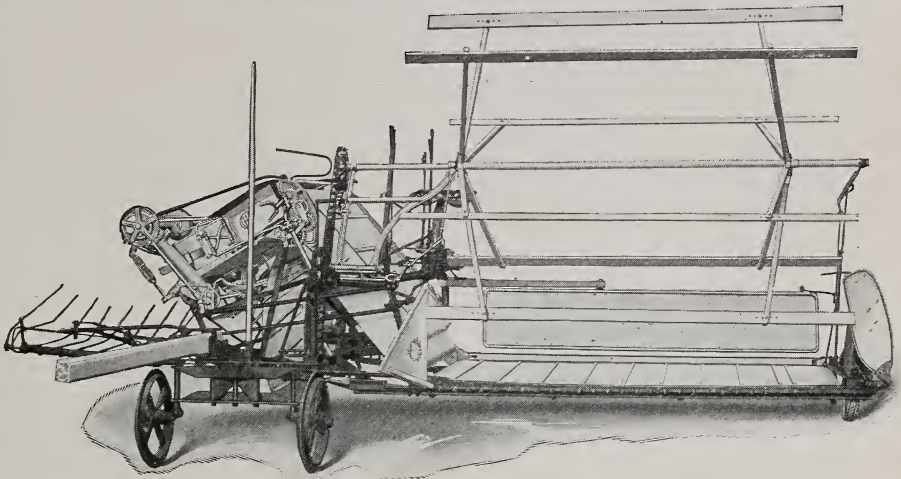
A bronze medal has recently been awarded to the Ohio Experiment Station by the American Pomological Society for excellence of fruits and varieties exhibited at the recent meeting of the society at Columbus, Ohio.

The gift is known as the "Marshall A. Wilder medal;" it has been regularly awarded for a number of years.

Mr. Wilder was one of the early members of the American Pomological Society from Boston and had at one time in his private gardens more varieties of fruits than is now found on any state experiment station grounds.

The American Pomological Society was organized more than 75 years ago by leading horticulturists in the eastern part of the United States and Canada.

Harry Clark, '18, is at present with the Ohio Moline Plow Company as expert.



The Hands of the Clock Are Coming to Harvest Time

THE time for gathering in the year's crops and profits is near at hand. The critical time approaches when all the binders of the nation must go out and compete with weather and field difficulties to save the maximum part of the yields.

Timely repairs will be many a man's solution for this harvest, but to limp through the season with machines that are really out-worn will prove disastrous. No farmer can afford to run a binder that has served too many years, nor can he practice true economy with a small, inadequate machine if his acreage and power demand an 8-foot binder.

We pledge ourselves, through our branch houses and dealer organization, to give our utmost in repair service and co-operation. Nevertheless, all of us know that it is wrong practice to repair a machine which is too old to be efficient even when repaired. Such a machine will defeat the great purpose by cutting down production per acre and per man. It is not even short-term economy because the machine will have to be abandoned too soon to make repairs for it a good investment.

Take careful consideration of requirements as harvest time approaches. If you need new machines, place your reliance in binders bearing the time-tried, service-proved names—**McCormick, Deering, and Milwaukee**. Grain binders of these familiar brands will this year again demonstrate that nearly ninety years of development and service in the fields of the world stand behind them. Safeguard your grain crop while you have time by ordering time- and labor-saving harvesting equipment and genuine I H C repairs from the nearby International dealer.

INTERNATIONAL HARVESTER COMPANY

CHICAGO OF AMERICA U S A
(INCORPORATED)

92 Branch Houses in the United States

FARM MANAGEMENT

RURAL LIFE, ETC.

B. P. HESS, Editor.

FARM ACCOUNTING

During the past winter there were held in Ohio 100 farm accounting schools. Most of the schools were of two sessions, so that in all 180 sessions were held, and these in 50 different counties of the state. The first session was taken up with instructions in farm accounting. The second, with analyzing farm business and studying farm management problems. A total of 21,000 farm accounting books were distributed, mostly at these schools, tho the local banks helped some.

C. R. Arnold and R. F. Taber, extension specialists in rural economics, were the men dividing honors in this work.

NUT-BEARING TREES

GOOD FOR OHIO

Native nut-bearing trees of Ohio are valuable for roadside planting, according to the department of forestry at the Ohio Experiment Station.

The department, however, advises against the planting of foreign trees, such as English walnut and pecan as they are generally not hardy in Ohio.

Common black walnut and shell bark hickory are two good trees for shade and for nuts. When planting black walnut, one year seedlings are advised as it is easier to secure a stand from this than when nuts are planted.

Hickory seedlings are difficult to transplant, having long roots when they are 3 or 4 years old so that these trees should be started directly from the nuts.

Walnut and hickory trees should be spaced about 50 feet apart.

FARMERS NOW OPERATE

MANY GRAIN ELEVATORS

One of the most important series of farm organizations in Ohio is the grain elevator companies, according to studies made by H. E. Erdman, of the department of rural economics, Ohio State University.

There are approximately 250 of these elevators now owned and operated by farmers. In most cases local companies were formed, having bought out the grain dealers in small towns and their places of business are now operated by the farmers. In some instances new elevators have been built.

Farmers' elevator companies purchase mostly grain, hay and wool. In some cases livestock is also handled, but one of their greatest functions is to furnish such supplies as feeds, coal, fertilizer, lime, drain tile, seeds and fencing to the farmer.

LAMB GROWING BULLETIN

READY FOR FARMERS

"Green Forage Crops for Fattening Lambs" is the subject of a bulletin recently issued by the Ohio Experiment Station, Wooster.

This publication deals with the fattening of lambs on rape and bluegrass forages supplemented with corn.

It will be mailed free to residents of Ohio upon request to the Experiment Station, Wooster.

H. C. Hyatt, '11, has been city forester for the city of Cleveland for the last ten years. Mr. Hyatt was a recent caller on the campus.

BETTER SIRES CONTEST

As a medium for promoting the enrollment of breeders of live stock in Ohio for the purebred sire campaign in this state, the following prizes are offered for competition under the conditions given:

CONDITIONS OF COMPETITION

First, the competition is to be between counties.

Second, the period of competition is the month of June.

Third, the persons representing each county must be boys or girls not over eighteen year old.

Fourth, each boy or girl participating in the contest represents a county, and his or her work will be to secure the enrollment of as many persons as possible in the county in behalf of pure bred sires.

Fifth, each person enrolled must fill out and have properly signed the blank form for this purpose, which will be supplied by the County Agent, or by the Department of Animal Husbandry, Ohio State University, Columbus, in case there is no Agricultural Agent in the County.

Sixth, all filled out enrollment sheets are to be turned over to the County Agricultural Agent, or in case of there being no such agent, are to be mailed to the Department of Animal Husbandry, at the Ohio State University. These enrollment sheets may be turned in at any time between June first and the morning of July first. All records must be mailed to the Ohio State University by July first, as shown by post office record or by personal delivery.

Seventh, no enrollment sheets are to be filled out in this competition by persons owning poultry only.

Eighth, further information regarding the pure bred sire campaign in Ohio may be se-

cured in printed form from the County Agricultural Agent, or the Department of Animal Husbandry, care Professor J. W. Wuichet, Ohio State University, Columbus, Ohio.

PRIZES OFFERED.

First Prize, a silk banner to the county enrolling the largest number of names in excess of one hundred.

Second Prize, to the boy or girl enrolling the largest number of names in the state, one hundred and twenty-five dollars. To secure this prize, which is offered by students and faculty of the College of Agriculture at Ohio State University, through the efforts of the Saddle and Sirloin Club, the contestant must enroll at least fifty persons as users of purebred sires.

Second Prize, a Hereford bull calf, offered by Mr. J. V. Hill, Roundhead, Ohio.

Third Prize, choice by the winner of a Holstein-Friesian bull calf offered by Ohio State University; a Guernsey bull calf offered by Circle W. Farm, Gates Mill.

Fourth Prize, choice of the following boar pigs: Duroc Jersey, offered by Thomas Johnson, Columbus, Ohio; Hampshire, Depew Head, Marion Ohio; Berkshire, Hoisington Bros., Creston, Ohio; Poland China, Ohio State University.

Fifth Prize, choice of a pure bred ram lamb or yearling: Shropshire, L. B. Palmer, Pataaskala, Ohio; Southdown and Merino, Ohio State University, Columbus, Ohio.

The following organizations contributed to the first prize of \$125:

UNIVERSITY GRANGE
TOWNSHEND AGRICULTURAL SOCIETY
SADDLE AND SIRLOIN CLUB
SHORT AG. SOCIETY
THE AGRICULTURAL STUDENT
FACULTY

UNDER THE AUSPICES OF THE

Saddle and Sirloin Club

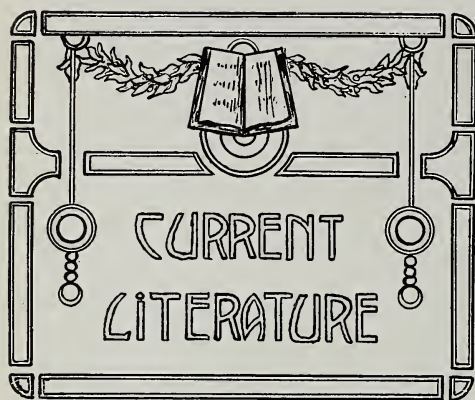
COLUMBUS, OHIO.

C. V. KENDALL, Pres.

O. S. U.

W. F. CORCORAN, Sec'y.

(This advertisement donated by the AGRICULTURAL STUDENT.)



F. L. Washburn, professor of economics and vertebral zoology in the University of Minnesota, has just completed a very thorough treatise on Belgian Hares, Flemish Giants and other meat producing rabbits. It is up-to-date and practical in every way, telling how a profitable rabbitry can be quickly and easily established. Professor Washburn gives much good information, such as instructions on purchasing stock, mating, building the rabbitry, cleaning and disinfecting, feeding, caring for the young, killing and dressing. He also in a very careful way treats of diseases and remedies, preparation and sale of skins. Besides a chapter on breeds and types there is a special colored plate of the leading breeds, and some sixty other plates of rabbits in their natural colors. This book of Professor Washburn's is printed by the Lippincott Publishing Co., and can be had for the price of \$2.00.

"The Soils and Agriculture of the Southern States," by H. H. Bennett, has just been released. It is believed that this book will place the most important information within the reach of the farmer, the land buyer, the appraiser of farm lands, the agricultural

experimenter, and the general student of soils. Generous illustrations and maps are included. The soils of the southern states are exhaustively dealt with in 399 pages. This book is published by the MacMillan Company of New York.

"Diseases of Economic Plants," by F. L. Stevens and J. G. Hall, is a useful reference and handbook for all who are interested in plant diseases and the application of treatment for same. Insects are not included in this treatise. Every up-to-date farmer and agricultural man will find this book a useful asset, due to the practical phase of the contents. It contains 507 pages, published by MacMillan.

Corn is by far the best known crop that the American farmer produces, and yet very little is known of its production. Some corn is grown on practically every farm and our annual crop sells for about three billion dollars, besides the great amount that is consumed on the farms where it is produced. Most young people consider the study of corn very uninteresting and a waste of time, probably because it is so common and everyone has a slight knowledge of its culture. For that reason the little volume by Charles B. Williams, Dean of Agriculture, and Daniel H. Hill, ex-president of the State College of Agriculture and Engineering of North Carolina, is just the book for Smith-Hughes high schools and other schools of undercollege standing. This book of 250 pages contains 186 carefully selected illustrations, which very clearly show the methods of corn production. In the text the scientific and economical methods are so pleasantly taken up and compared that one can not but be



A Layer Next Winter!

OF course your chicks will lay the first winter if they are fed a balanced ration and properly cared for. But how about getting the ingredients? Can you always be sure about the quality? Will they be up to standard and of the right nutritive value? How about the moisture content? Will you always have the time to properly analyze, proportion and mix them?

Purina Poultry Chows

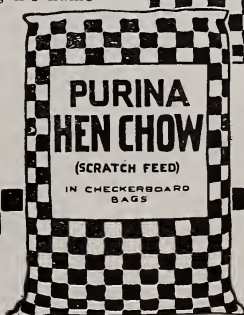
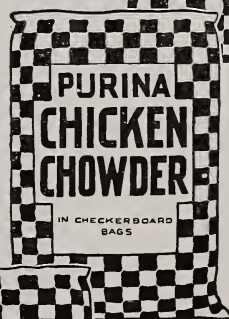
Laboratory-tested, scientifically mixed ingredients of the highest quality are the only kind that can back up the Purina Guarantee. It pays in time and money to buy your poultry ration in Checkerboard Bags. Regardless of what tests they have been put to, Purina Chows have always been found to be of uniform quality and in perfect balance. Your time is worth more in other directions. Let the Purina Mills mix your rations. See your dealer today. If he can't supply you write us direct mentioning his name and the number of chickens you have.

Feed from the Checkerboard Bags.

RALSTON PURINA COMPANY

St. Louis, Mo.

Ft. Worth, Tex. Nashville, Tenn. Buffalo, N. Y.



come interested, and when the book is completed you have a fair knowledge of the growing of other crops as well as a complete understanding of corn culture. All of these things combined with the simple and direct language in which the book is written make "The Corn Book for Young Folks" one of the best books ever published on this subject. Coming from such men as it does it is an authority that cannot be easily equaled.

This book is printed by Ginn & Co., and can be obtained from them for the price of \$1.20.

ALUMNI

Sanford G. Price, '19, of Berea, Ohio, is employed with the Ohio Nut and Bolt Company.

Willis S. Mozier, '20, of Mt. Gilead, Ohio, was visiting on the campus April 2nd.

H. P. Miller, D. V. M., '95, who was the first county agent in Ohio, when he acted as county agent of Portage county, has retired and is running a dairy farm at Sunbury, Ohio.

Ray C. Bish, '99, is located at Washington D. C., where he is in the bureau of markets of the U. S. Department of Agriculture.

Clarence A. Clawson, '99, is a member of the Indiana State Veterinary Corps, with his office at Indianapolis, 315 Federal building.

Albert E. Day, '02, resides at Newton, Ohio.

C. A. Miner, '05, Horticulture, is living at Route 1, Ensley, Alabama.

Charles E. Snyder, '09, lives at 10400 Prospect avenue, Chicago.

A. B. Musser, '09, D. V. S., is practicing at Wapakoneta, Ohio. His address is 720 West Auglaize street.

Harry R. Clum, '10, is farming near Thornville, Ohio.

Etta May Katz, H. Ec., '11, is teaching at 400 Sweet Briar street, Pittsburgh.

Joseph E. Clawson, '08, is located on the campus as training assistant for the Federal Board of Vocational Education.

Alfred E. Cleveland, '13, is operating a farm at Capron, Illinois.

Charles F. Class, '13, is located at Lebanon, Ohio, as county agent for Warren county.

Edgar S. Bird, '14, lives on a farm near Independence, Kentucky.

Clark O. Biddle, '14, is farming at Wauseon, Ohio.

Everett P. Reed, '14, may be addressed at 413 College Way, Urbana, Ohio.

R. W. Wells, '16, is working at Woodsfield, Ohio.

J. P. Schmidt, D. V. S., '16, is county agent with offices at Mt. Gilead, Ohio.

O. M. Baker, '16, is at the Ohio State Experiment Station at Wooster, Ohio.

Harrison W. Zuercher, '16, is operating a general store at North Canton, Ohio.

Virgil O. Dreyer, '17, has moved to 72 Harbor Apts., Dayton Ohio.

Griff Edison, '17, is at 303 Produce Exchange, New York City.

Beatrice Stocklin Laughlin, '19, may be addressed for the present at 1909 River street, McKeesport, Pennsylvania. This is Mr. Laughlin's business address, as they are not permanently located as yet.

Charlotte Neutse, '20, has moved to 624 Cherry street, Toledo.

Albert T. Haag, '19, is teaching Horticulture at West Technical High, Cleveland, Ohio.

AGSTONE

Doubles Dollars

Ask any farmer who has used it. He is satisfied. He wants Agstone Storage Bins at every railroad station. He wants Agstone within reach every day in the year. It will double every dollar paid for it. Boost for Bins.

Dr. Agstone

Can cure every case of sour soil sickness. His patients always get well. Colonel Clover will swear to it. Doctor Agstone charges less for his services than any other dirt doctor. His medicine is safe to take in sack, ton or car-load doses. Boost for Bins. Insure crops. Farms kept healthy, make you wealthy.

Boosts Crops and Business

Railway experts seek ways and means to increase freight business. They measure success by the profit in dollars they get out of business. Some Southern Railways are hauling Agstone free for farm use. They know it is the best, surer and cheapest crop booster. They know the more Agstone used, the more freight cars will be needed to haul crops to market. Boost for Bins. Let's Go.

SAM ROSEN

1574 NORTH HIGH

*Suits Cleaned and
Pressed While You
Wait 50c*

CLEANED AND PRESSED,
\$1.75.

Everything and Anything in
the Tailoring Line.

SUITS REMODELED

THE FIFTH AVENUE FORAL COMPANY

Wholesale and Retail

Largest Growers of
Cut Flowers & Plants
In Central Ohio

CORSAGES A SPECIALTY

We Will Send Flowers Home
to MOTHER on
MOTHERS' DAY

518-552 WEST FIFTH AVE.
Citz. 16052; Bell, N. 278

120 EAST BROAD STREET
Citz. 6085; Bell, N. 2439

Henry W. Schuer, '16, and Mrs. Schuer (Rose Malone), ex-'16, who live on a farm near Urbana, Ohio, report the arrival, February 16, of a son, named Charles Andrew.

John G. McGuffey is employed with a fertilizer company at Bartow, Florida.

R. B. Fife, '17, is assistant professor in the department of agricultural education at Ohio State.

L. B. Cooperrider, '17, of Glenford, is teaching under the Smith-Hughes system.

D. R. Van Atta, '13, has again changed his business activities. He has left the McCullough Seed Co. and has gone into partnership with a Mr. Strong, a seed man of Cincinnati. They have organized a large company and have very progressive ideas around which they are building a good organization. They have located opposite the Cincinnati stock yards and are dealing in fertilizers, wholesale seeds, and farm implements. Mr. Van Atta was formerly the county agent of Hamilton county.

George Valley, '17, is now employed in the soils extension department at Ohio State. His work is to test soils.

Robert W. Harned, '06, is professor of Zoology and Entomology at the Mississippi Agricultural and Mechanical College.

F. L. Wright, assistant state leader of boys' and girls' club work in Missouri, has recently been appointed county club agent in Hamilton county.

C. C. Caldwell, county agent of Jackson county, West Virginia, began work in Montgomery county April 1 as county club agent.

Horace Kidd, of Dayton, a graduate of the Ohio College of Agriculture in 1920, began work in Tuscarawas county April 1 as county club agent.

WHAT WILL WE EAT?

If every country kid
Has got it 'neath his lid
To quit the fields of wheat,
And clerk on Easy Street,
What will we eat?

When those we educate
Elude the barnyard gate,
And blush to smut their feet
By stepping off concrete,
What will we eat?

If no one stays to trail
Behind old Dobbin's tail
And raise the corn and meat,
The cabbage, spud and beet,
What will we eat?

—Francis W. Speight.

GLUE SPRAY CHECKS

PEACH BROWN ROT

By testing out a new spraying compound for the control of brown rot of peaches, the department of botany at the Ohio Experiment Station is now able to give peach growers of the State valuable information in the control of this disease.

For years a spray known as self-boiled lime-sulphur has been used, but since many difficulties were involved in its preparation, growers have been waiting for a substitute that could be quickly prepared and easily applied.

The new spray is known as a lime-sulphur-glue preparation. It is made of flour of sulphur, hydrated lime and ground glue, the glue serving as a sticker when mixed so that the spray is not easily washed off the leaves or fruit.

Where this spray has been used brown rot does not develop and the fruit is quite solid and firm, insuring its keeping qualities over a longer period and rendering the fruit easier to market.

Learn to DANCE Before Your Vacation

Prof. W. J. Rader's Academies of Dancing

NEIL AVE. ACADEMY, 647 Neil Ave.

Phones: Citiz. 4431, Main 6189.

Take Neil Ave car and get off at Poplar Ave.



Beginners' Classes organize Friday evening, May 6th. Get the very first lesson.

Private lessons afternoons or evenings.

Assembly Nights Monday, Thursday and Saturday.

Advance Class, in the front hall, Monday evenings. Go to a school that gives you thorough instruction.

Tuition for beginners: Ladies, per term of 10 lessons, \$5.00; Gentlemen, \$6.00; Private Lessons, 5 lessons \$6.00..

Tuition can be paid \$1.00 a lesson until paid.

Private lessons can be had afternoons or evenings.

The Waltz, Two-Step, Fox Trot and One-Step taught in one term. Go to the school that gives you thorough instruction.

OAK ST. ACADEMY 827 Oak St.

Citz. 7195; Residence, Citiz. 4431; Main 6189.

A strictly private place for Sorority and Fraternity dances.



COLUMBUS, OHIO.

*Show and Commercial
Printing*

SPIRITUAL SPANKING

"Willie," exclaimed the young widow to her recalcitrant offspring, "if you don't behave yourself and come in the house right away I'll get out the ouija board and have your poor dear papa give you a good scolding."—*American Legion Weekly*.

ANNUAL MEETING

During the summer the Rural Economics Department held eleven conferences with county agents on cost production and marketing for the ensuing year, and as a result the department will be kept busy until late spring.

When the annual meeting of the land grant colleges of the United States was held at Springfield, Mass., in October, the ways and means for further experimental work, especially in farm management and rural economics, was thoroughly discussed. Until recent years practically no attention has been paid to the economic side of experimenting. Most farmers know at least a few things to do which increase returns; but are they economic? If so, how economic? Experimentation will tell.

Figures show that there are 39 automobiles for every 100 farms throughout the country. Iowa leads with the largest number of farm-owned motors, New York comes fourth after Illinois and Texas, then Pennsylvania, Ohio, Nebraska, Kansas, Indiana and Michigan.

With the next president, the champion football team, and the champion baseball team, Ohio is now in the lime-light and, while betraying a becoming modesty, is not trying to hide behind anything.

One fine thing about having two printers running for president was that they had no trouble in finding an upper case "I" when they needed one.

O. S. U. students have hit old H. C. L. in the head by converting the tails of their 18 silk shirts into neckties. This prevents waste below the waist.

MOTHER'S DAY

By EDNA TUCKER MUTH

My soul in reverence now prays
For me, for thee, this day of days—
With joy and thanks remembers thee,
With earnest longing asks for me
That I may grow as thou hast grown,
Knowing the sorrows thou hast known,
Grasping the joy that has been thine;
The greeting year, the blossoms shine,
The fruit of purpose, rich, mature,
Faith that survives, hopes that endure;
A light heart baffling the rime,
Feeling no chill, no blight, no time,
Reacting in its pleasures mild,
With that glad lilt which buoys the
child.

May I, as thou, for secret stress
Keep tears; that smiles poor eyes may
bless,

Keep my hands cleansed from sordid
dross,

My shoulders squared to raise the cross,
My eyes uplifted, mother sweet,
From the dull pain that clogs the feet.

My soul asks in the days to be
That I may, stumbling, follow thee,
And following still, as once I ran
Across the floor—a little span—
Each step by step and day by day
May take me on my mother's way;
So my glad soul remembers thee
And asks this—always this for me,
Oh, mother dear, thou'rt far away,
Think on thy child this Mother's Day.



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CORN-SOYBEAN COMBINATION

(Continued from page 408)

unprofitable fields have been caused by planting uninoculated beans in the corn. In this case they compete with the corn for nitrogen as well as water and mineral plant food.

6. Method of planting. While some check the beans and corn in the hill together, this should not be done unless it is absolutely essential to control the weeds. The combination, checked, is far more likely to be unprofitable than if drilled.

Most planters now have bean attachments for drilling the two seeds together. If your planter hasn't one it is usually best to plant twice—first the corn, then the beans following the planter tracks. Do not mix the two seeds in the planter box.

These are some of the easily discoverable factors influencing the profitability of the mixture. It seems probable that the corn-soybean combination will find a definite place on corn-belt farms. It is surely worthy of at least a trial by anyone using silage.

We may then sum up the advantages and disadvantages of this combination. The advantages are:

1. Larger yields and hence more economical use of ground in many, probably a majority of cases.

2. Little soybean seed is required.

3. Labor may be saved in planting and harvesting.

4. A little nitrogen and organic matter is added to the corn land.

5. By planting all one's land in corn, one is usually surer of a minimum crop of silage than if some land is planted to beans alone.

The disadvantages are:

1. One cannot control the percent of soybeans in the mixture. For example, in our own trials this percent

has run from $11\frac{1}{2}$ to 18. If you grow them separately this can be made definitely.

2. The soybeans will sometimes reduce the yield of corn.

3. It is harder to keep corn clean, although some farmers claim that the soybeans help keep weeds down.

4. The corn must be harvested with a binder, and if the corn is tall many of the beans will not be held in the bundles. In our bottom land experiments two-thirds of the cut beans dropped out of the bundles and were left on the ground. With corn of ordinary height and the taller varieties of beans there is little or no trouble in getting all of the beans with a binder.

LUBRICATION

(Continued from page 411)

power, but where gasoline will pass, so will oil. This condition is often responsible for spark plugs fouling, and where this is troublesome the condition can often be remedied by changing the oil in the crank case.

The proper type of oil is second in importance only to a high quality. Quality in a motor oil includes purity, cleanliness, and uniformity,—by which is meant that every drop must be exactly like every other drop,—freedom from acid, alkali, paraffin, and any other heavy residue that will form a carbon deposit. Quality also includes the ability to flow freely at low temperatures.

Some people believe that an oil having a high fire test is necessarily a good oil, but this is not always the case. The instantaneous temperature at the time of ignition within a cylinder is about twenty-seven hundred degrees. Of course this is quickly reduced to about one hundred and eighty degrees, but during that instant at the time of

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ignition, some of the oil is bound to burn, for it is not possible to make an oil that will stand a heat like that to which it is subject in the cylinders of an engine. The question most important to the consumer of oil is, what remains after partial burning? The best oils burn cleanly and entirely, leaving only a small amount of soft flaky carbon, that will blow out the exhaust valves or can be wiped out with a piece of waste, rather than resulting in a hard flinty carbon that must be burned out with an oxygen flame or cut out with a chisel.

Naturally the problem of securing an oil of this quality is a very complex one, and by far the larger part of the oils on the market do not have the desired quality.

In the refining of crude oil the first thing that comes over is gasoline, then kerosene, and on down through the lubricating oils, until finally there is a residue of black sticky pitch, only a high grade tar, that refuses to distill over. This is called bottom settlings or cylinder stocks. Now in an oil that is made from a very light crude, the practice is to blend it with a small amount of this bottom settling to get a heavier oil which some engines demand. Naturally when this oil burns in the cylinders, it will leave a greater deposit of carbon than will an oil that is pure, straight run distilled, from a heavy crude. Here is a simple home test that can be applied to determine the quality of oil. Place a half pint or less in a pan and heat it till it burns. (Here is a chance to note the temperature reached before combustion takes place.) After three-fourths of the original sample has burned away, note what remains. If it is still a good lubricant, similar in appearance and character to that with which the test

was started, then it is a good oil, but if, after three-fourths of the sample has burned away, there remains a black, sticky tar, not at all like that with which the test was begun, then it is not a good oil, because it will result in excessive carbon deposits within the cylinder.

So it is that accurate and efficient lubrication can be obtained only by the proper use of high grade oil, and by that is meant an oil that is clean, pure, and uniform, that has the proper viscosity and yet will flow freely at low temperatures.

It is a sad fact that in the past ninety per cent of the consumers of oil, through ignorance or neglect, have put "any old oil" in their crank cases, but now with the development of several types of oil, each with a special adaptation to the purpose for which it was designed, people are rapidly becoming educated along this line, and the number of motorists driving up to the garage door and saying, "Give me a quart of oil, I think medium will do," is daily declining.

EARLY-MATURING EARS BEST TO SAVE FOR SEED

That farmers should give attention to the selection of seed corn at corn cutting time is pointed out by C. G. Williams, agronomist at the Ohio Experiment Station. Corn on the average is later this season than usual and only ripe, early-maturing ears will be safe to be selected for seed.

The average date of the earliest killing frost in Ohio does not come much before the first week in October so that the corn crop has a chance of maturing fairly well by that time. A September frost, however, would destroy much corn and render it unfit for seed.

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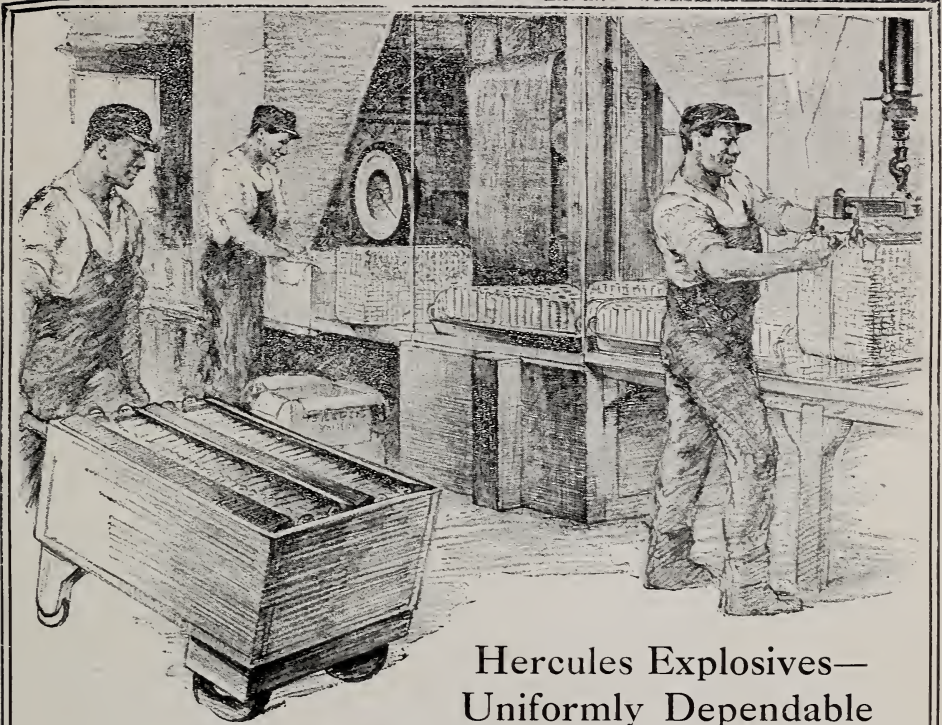
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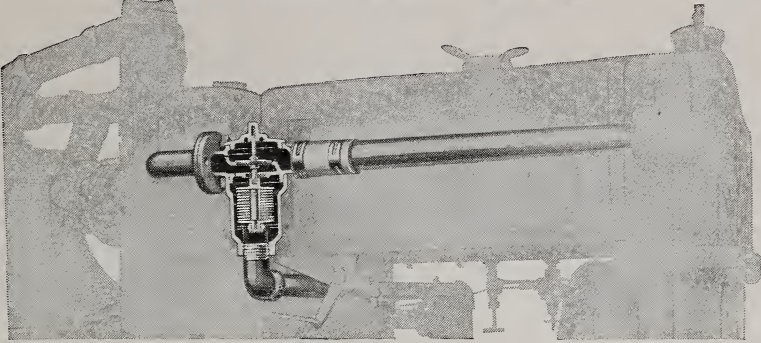
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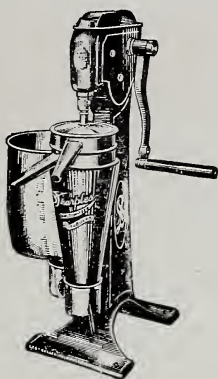
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